

# CURRICULUM VITAE



## **Olga Gorbacheva**

**Date and place of birth:** December 24, 1982, Ulan-Ude, Russia

**Nationality:** Russian Federation

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### **Education:**

- 2011– present Institute of Theoretical and Experimental Biophysics of the Russian Academy of Sciences (RAS) (Pushchino, Russia). Postgraduate course in Biophysics. *PhD student in Biophysics*. «Involvement of mitochondrial ATP-dependent potassium channel in the circulation of potassium across the inner membrane of mitochondria and the possible mechanism of cardioprotective action of activators of the channel».
- 2009–2011 Pushchino State University (Pushchino, Russia), Biology Department. Undergraduate course in Biology with specialization in biophysics and biomedicine. *Master of Science in Biology*. «Functioning and regulation of mitochondrial ATP-dependent potassium channel».
- 2000–2005 Perm State University (Perm, Russia), Biology Department. Undergraduate course in Biology with specialization in valueology. *Specialist in Biology*.

### **Research experience:**

- 2014-present Junior research worker in the Laboratory of pharmacological regulation of cell resistance, Institute of Theoretical and Experimental Biophysics of the Russian Academy of Sciences (RAS) (Pushchino, Russia).
- 2009-2014 Junior research worker in the Laboratory of mitochondrial transport, Institute of Theoretical and Experimental Biophysics of the Russian Academy of Sciences (RAS) (Pushchino, Russia).
- 2006-2007 *Senior Assistant* in the workshop of vaccine-serum preparations, Federal State Unitary Enterprise, Perm Scientific Production Association «Biomed» (Perm, Russia).

### **Field of research:**

Mitochondrial potassium transport

Functioning and regulation of mitochondrial ATP-dependent potassium channel

Mechanisms of cardioprotection

The role of mitochondrial ATP-dependent channel in protecting the heart from ischemia and infarction

**Scientific interests:**

potassium channels in the mitochondrial inner membrane, cardioprotective mechanism of action of activators of the mitochondrial ATP-dependent potassium channel, preventing the accumulation of reactive oxygen species in mitochondria during activation loop of potassium, long-term adaptation mechanisms to hypoxia, search for new regulators of potassium transport in mitochondria

**Research methods:**

method of differential centrifugation, spectrophotometry, method for detecting fluorescence in the Amplex Red peroxidase, polarographic method, the electron and confocal microscopy, BLM.

**List of publications:**

Mankovskaya I., Nosar V., **Gorbacheva O.**, Gonchar O., Gavenauskas B., Bratus L., Mironova G. Effect of uridine on the endurance development of animals with different resistance to physical trainings: The role of the mitochondrial ATP-dependent potassium channel. *Biophysics*. 2014; 59 (5): 1-6.

**Gorbacheva O.**, Moshkov D., Venediktova N., Mironova G. The role of ATP-dependent potassium channel in activation the potassium cycle in rat liver mitochondria. *Biol. Membr.* 2014; 31(1): 44–49.

Venediktova N., Shigaeva M., Belova S., Belosludtsev K., Belosludtseva N., **Gorbacheva O.**, Lezhnev E., Lukyanova L., Mironova G. Oxidative phosphorylation and ion transport in the mitochondria of two strains of rats varying in their resistance to stress and hypoxia. *Mol Cell Biochem*. 2013; 383:261–269, DOI 10.1007/s11010-013-1774-8.

Mironova G., Shigaeva M., Gritsenko E., Murzaeva S., Germanova E., **Gorbacheva O.**, Lukyanova L. Activity of mitochondrial ATP-dependent potassium channel in animals with different resistance to hypoxia before and after the course of hypoxic training. *Bull Exp Biol Med*. 2011 May;151(1):25-9.

Shigaeva M., Gritsenko E., Murzaeva S., **Gorbacheva O.**, Talanov E., Mironova G. Age-related changes in the functioning of the mitochondrial potassium-transporting system. *Biophysics*. 2010 Nov-Dec;55(6):1030-7. Russian.

Mironova G., Shigaeva M., Gritsenko E., Murzaeva S., **Gorbacheva O.**, Germanova E., Lukyanova L. Functioning of the mitochondrial ATP-dependent potassium channel in rats varying in their resistance to hypoxia. Involvement of the channel in the process of animal's adaptation to hypoxia. *J Bioenerg Biomembr*. 2010 Dec;42(6):473-81.

**Participation in conferences:**

**Gorbacheva O.S.**, Shigaeva M.I., Kravchenko S.V., Shchipakina T.G., Mironova G.D. Disruption of potassium homeostasis and oxidative exchange of rat brain and liver mitochondria in experimental epilepsy. International conference of young scientists “Mitochondrial pores and channels as pharmacological targets”, Pushchino, Russia, 29-30 Oct 2014. P 21.

Mironova G.D., Novoselova E.G., Talanov E.Yu., **Gorbacheva O.S.** Uridin inhibits the NF- $\kappa$ B signaling pathway and the expression of Hsp72 in spleen lymphocytes from inflammation bearing mice. International conference “MipTec2014”, The Leading European Event for Drug Discovery "Translating Science into Drugs". Basel. Switzerland. Sep 2014. P.23 – 25.

**Gorbacheva O.**, Belosludtseva N., Fedotov I., Shigaeva M., Kravchenko S., Surina N., Shchipakina T., Venediktova N., Poletaeva I., Mironova G.D., Lemasters J. Respiration, ion transport, and

oxidative exchange of rat brain and liver mitochondria in experimental epilepsy. International conference "Science of the Future" St. Petersburg, Russia, 17-20 Sep 2014.

Nosar V., **Gorbacheva O.**, Gonchar O., Gavenauskas B., Bratus L., Mankovskaya I., Mironova G. Effect of uridine on the endurance development of animals with different resistance to physical trainings: The role of the mitochondrial ATP-dependent potassium channel. Biological motility: new facts and hypotheses. Pushchino, Russia, 11-15 May 2014

**Gorbacheva O.**, Venediktova N., Moshkov D., Mironova G. The role of the ATP-dependent potassium channel in potassium transport of rat liver mitochondria and cardioprotection mechanisms. International Conference of Young Scientists "Experimental and theoretical biophysics'13." Book of abstracts, p. 94, Pushchino, 2013.

**Olga Gorbacheva**, Venediktova N., Moshkov D., Mironova G. Cyclization of potassium in rat liver mitochondria in the functioning mitochondrial ATP-dependent potassium channel and its possible role in cardioprotection. MiP 2013 - 9th Conference Mitochondrial Physiology, p. 92, Obergurgl, Tyrol, Austria, 23-27 Sep 2013.

**Gorbacheva O.**, Venediktova N., Moshkov D., Mironova G., Cyclization of potassium in rat liver mitochondria in the functioning of the mitochondrial ATP-dependent potassium channel and its possible role in cardioprotection. International Conference "Receptors and intracellular signaling ", Pushchino, May 27-30, 2013.

**Gorbacheva O.**, Venediktova N., Shigaeva M., Mironova G. The proposed role of mitochondrial ATP-dependent potassium channel in the mechanisms of resistance to stress. the 17th International Pushchino School-Conference of Young Scientists "Biology - Science of the XXI century", Pushchino, 2013.

Venediktova N., **Gorbacheva O.**, Shigaeva M., Belova S., Lukyanova L., Mironova G. The study of oxidative phosphorylation and potassium transport in rat liver mitochondria with different stress resistance. IV Congress of Russian biophysicists. Symposium I, "Physico-chemical basis for the functioning of biopolymers and cells", Nizhny Novgorod, 20-26-th of August, 2012.

**Gorbacheva O.**, Venediktova N. Oscillations of potassium flux in mitochondria associated with the work of the ATP-dependent potassium channel. Book of Abstracts International Pushchino School-Conference of Young Scientists, 2011.

Mironova G., Krylova I., **Gorbacheva O.**, Bulion V., Selina E., Belova S., Moshkov D., Sapronov N. The role of mitochondrial ATP-dependent potassium channel in the mechanism of uridine-containing drugs action on energy exchange, lipid peroxidation and myocardial antioxidant system under the conditions of acute coronary insufficiency. Mitochondrial international program, 8-th conference, 2011.

**Gorbacheva O.**, Venediktova N., Mironova G. The study of kinetics and regulation of the potassium cycle in the mitochondria. The 6-th Russian conference with international participation "Hypoxia: mechanisms, adaptation, correction". Moscow, 2011.

**Gorbacheva O.** Conditions of potassium activation cycle in the mitochondria. Book of Abstracts of All-Russian Scientific Conference with international participation "The days of biochemistry at the St. Petersburg State Medical University", 2011.